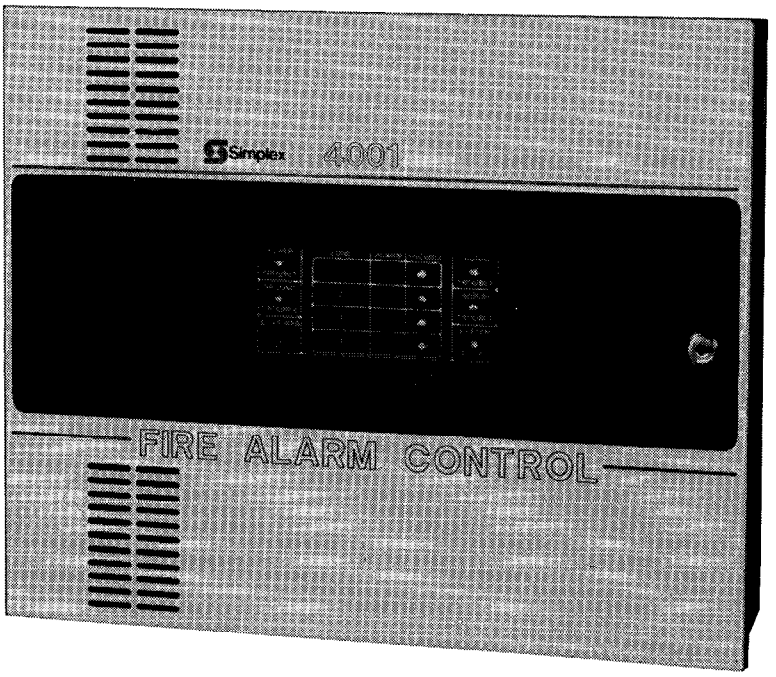
Simplex

4001-9403 and -9404 Fire Alarm Systems

Installation and Operating Instructions



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WARRANTY

Contact your local Simplex Time Recorder Co. Branch Office (listed in the Yellow Pages under Fire Alarm) for Warranty Registration & Information.

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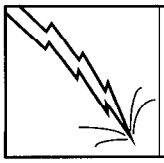


CAUTION
ELECTRICAL HAZARD

Disconnect electrical power when making any internal adjustments or repairs. Installation and servicing should be performed by qualified Simplex Representatives.

These instructions only apply to United States installations.

IMPORTANT DEFINITIONS

Alarm-Initiating Device: A device which, when actuated, initiates an alarm. Such devices, depending on their type, can be operated manually or actuated automatically in response to smoke, flame, heat or waterflow. (Examples: pull stations, heat detectors, smoke detectors, sprinkler flow switches, etc.)

Alarm-Notification Appliance: A device that produces an audible and/or visual alarm signal in response to a fire emergency. (Examples: horns, bells, chimes, flashing lights, etc.)

Annunciator: An electrically operated visual signaling device having one or more lamps or LEDs to display the status of the fire alarm system.

End-of-Line Device: A device used to terminate a supervised circuit.

Initiating-Device Circuit: A circuit to which automatic or manual initiating devices are connected.

Local Energy Master Box: A municipal master box that uses electrical energy from the protected premises to energize its electromagnetic tripping mechanism. See definition for shunt master box.

Notification-Appliance Circuit: A circuit to which notification appliances are connected.

Shunt Master Box: A municipal master box that uses electrical energy from the municipal fire alarm system to energize its electromagnetic tripping mechanism. See definition for local energy master box.

Zone: A designated area of a building. Commonly, zones within a building are annunciated to aid in locating a fire.

SYSTEM INTRODUCTION

The 4001-9403 and -9404 are four-zone, electrically supervised, fire alarm panels.

- *The 4001-9403* connects to a 120VAC, 60 Hz source.
- *The 4001-9404* connects to a 220/240VAC, 50 Hz source.

Each system contains one notification appliance circuit, battery standby power, and battery charger.

The systems provide an early warning evacuation signal for building occupants if a fire occurs. The systems consist of:

- *Alarm-initiating devices* — Smoke detectors, heat detectors, pull stations, etc.
- *Alarm-notification appliances* — Horns, bells, and visual units.
- *A control panel.*

Each system may also contain optional features.

Since the -9403 and -9404 operate the same except for input power, we will discuss system operation as it applies to the -9403.

Alarm-initiating devices are installed in the building and connected to one of four initiating-device circuits on the control panel. Each initiating-device circuit is given a zone number (1, 2, 3, or 4). Thus, the various areas of the building can be designated as zone 1, zone 2, zone 3, or zone 4. The control panel monitors each zone for troubles and alarms.

SYSTEM INTRODUCTION — Continued

Alarm-notification appliances are located throughout the building to provide acceptable sound levels. These appliances are connected to a notification-appliance circuit on the control panel. The control panel activates the notification appliances from a central location.

You operate the system using the LED indicators and switches on the control panel. When an alarm or trouble condition exists, the panel LEDs indicate the location and type of condition.

- *Red LEDs indicate an alarm condition when on.*
- *Amber LEDs indicate a trouble condition when on.*

Switches allow you to interact with the system in various ways (see Operating Instructions on Page 23).

A diagram of a typical system is shown in Figure 1.

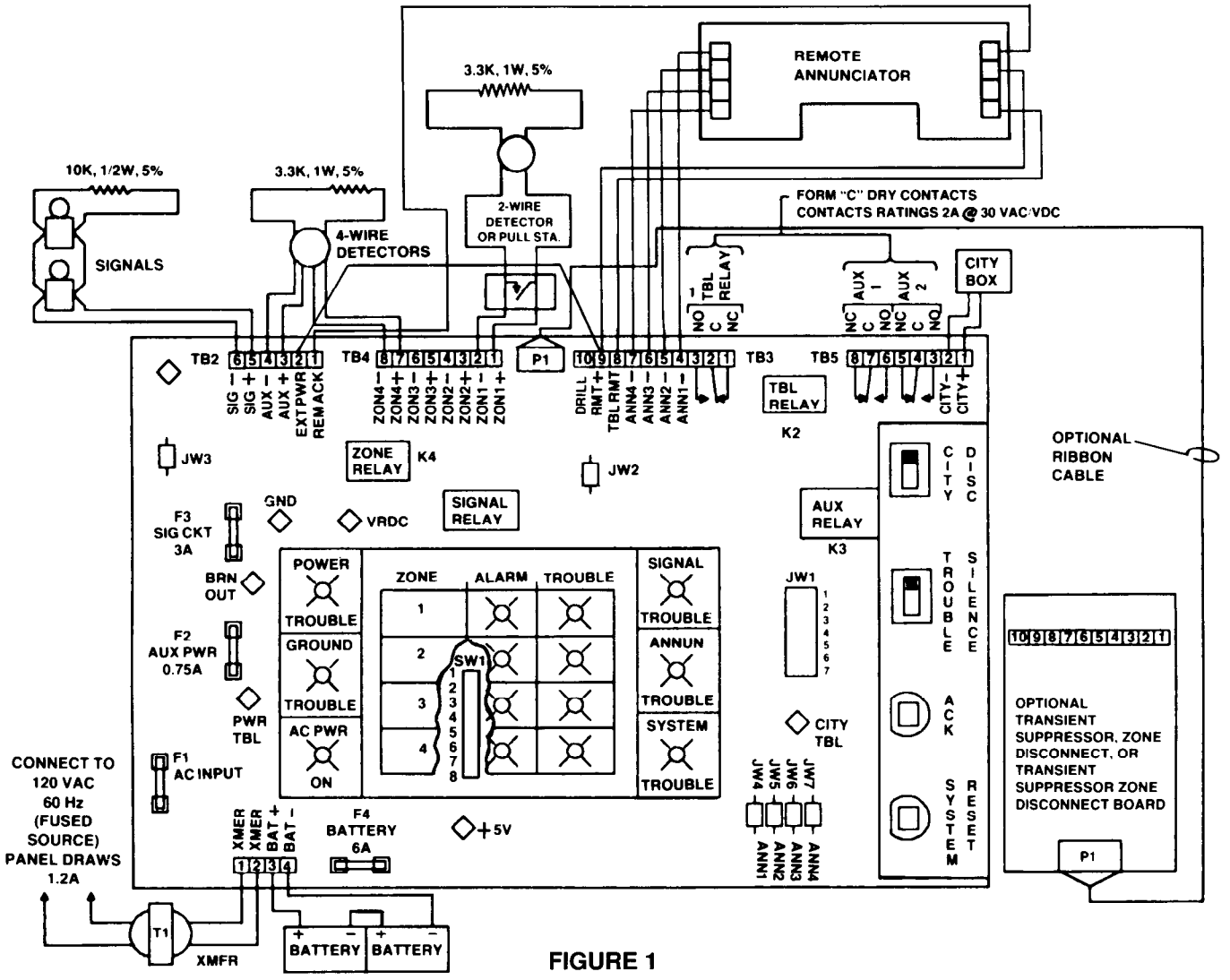


FIGURE 1

INSTALLATION INSTRUCTIONS

INTRODUCTION

Be sure that you are thoroughly familiar with this installation procedure before installing the system.

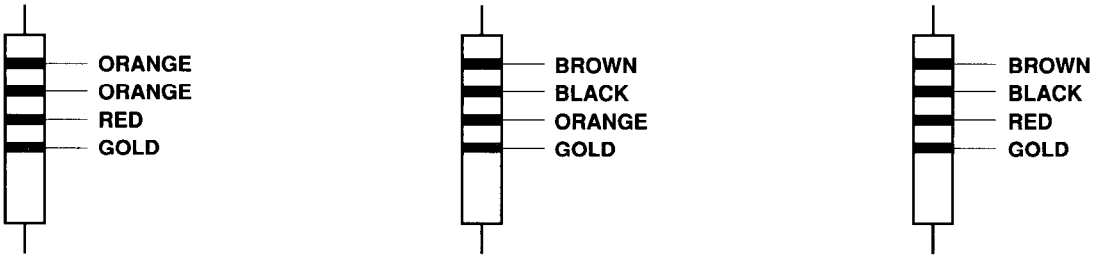
To help you with the installation of this and other Simplex systems, the following publication is available for general reference: *How to Wire a Building for a Fire Alarm System.*

TOOLS AND EQUIPMENT REQUIRED

- 1/4-Inch Flat-tip Screwdriver, 8-Inches long
- 1/8-Inch Flat-tip Screwdriver, 4-Inches long
- Volt-ohmmeter
- Diagonal Cutting Pliers
- Wire Strippers
- End-Of-Line resistors (EOLRs) (supplied by Simplex): five 3.3K, 1 watt resistors; two 10K, 1/2 watt resistors; two 1K, 1 watt, resistors
- System Wiring Diagram 841-610.

GENERAL NOTES

- Notify appropriate personnel (building occupants, fire department or monitoring facility, etc.) of the installation.
- When running wires to control panel, identify wires appropriately: 120VAC input power, notification (signal) circuit, zone 1, zone 2, etc., and identify all "+" wires and "–" wires.
- The panel's terminal boards are labeled with a TB number (TB1, TB2, TB3, etc.), and each terminal is designated a terminal number (1, 2, 3, etc.). Therefore, TB1-1 is terminal 1 on terminal board TB1, TB1-2 is terminal 2 on terminal board TB1, etc. Each terminal is also identified with an abbreviation of the circuit wire that is to be connected to it (SIG –, SIG +, ZON1 –, ZON1+, etc.).
- Use the following resistor color code (Fig. 5) to identify the end-of-line resistors (EOLRs) used in the installation:



3,300-OHM (3.3K, 1 WATT) RESISTOR

10,000-OHM (10K, 1/2 WATT) RESISTOR

1,000-OHM (1K, 1 WATT) RESISTOR

FIGURE 2

GENERAL NOTES — Continued

- All wiring must be in accordance with local codes.
- All wiring should be in accordance with National Electric Code, Article 760.
- A neatly wired system will help assure an accurate inspection of all connections and simplify troubleshooting.

GENERAL REQUIREMENTS FOR SYSTEM WIRING

These requirements are intended to aid the installer in making a safe and trouble-free installation, but they are not intended to circumvent any pertaining and/or required codes, laws, regulations, etc.

Note: These wiring specifications are subject to local authority approval.

General Wiring Requirements For Fire Alarm Systems

1. All wires are to be copper conductors only.
2. All wiring, except incoming power and ground connecting wires, must be free from grounds or shorts and have a resistance of one megohm, or higher, to earth.
3. Metallic conduit, metallic raceway, plastic pipe, or plastic raceways may be used.

   If metallic conduit is used, the following must be observed: If the continuity of the metallic conduit is not maintained, then a 12AWG (minimum) drain wire must be used between the break of metallic conduit. The drain wire will be connected to the metallic conduit at both ends.
4. Only system wiring can be run in the same conduit, pipe raceway, or multiconductor cables.
5. Where system wires pass through floors or fire-rated walls, the installation shall be made to prevent the spread of fire from floor to floor (i.e. patching of holes, fire stops, etc.).
6. All system wiring subject to physical damage shall be mechanically protected based on the environment the cable is subjected to.
7. Each device — pull station, detector, horn, bell, etc. — must have its own enclosure such as a back box, outlet box, etc.
8. A minimum of 6 inches of free conductor will be required in each electrical box to facilitate terminations. A 12-inch service loop of cable is required for all continuous pulls through an electrical box.
9. Unused openings in electrical boxes shall be properly "blanked off" with suitable protection equivalent to the wall thickness of the equipment. All splice boxes shall have a blank cover.
10. All wiring shall be terminated with U.L. listed devices (i.e. wire nuts, pressure connectors, etc.). Wiring terminated with only electrical tape is not permitted. All splicing (free ends of conductors) shall be covered with an insulation equivalent to that of the conductors.

SYSTEM WIRING SPECIFICATIONS

Incoming Power Wiring

Source — Life Safety Branch Circuit, or as required by local code.

Panel draws 2A maximum at 120V, 60Hz via a fused disconnect or circuit breaker.

Wiring — Use two 14 AWG wires, or 14AWG cable.

Earth Detection

Source — Connection shall be made to an approved dedicated earth connection per NEC Article 250 (NFPA 70).

Wiring —Use 14AWG wire.

Alarm-Initiating Device Wiring

Alarm-initiating devices — Manual pull stations, automatic heat detectors and automatic smoke detectors.

Wiring — Four circuits with two wires per circuit. Each circuit terminates with a 3.3K end-of-line resistor. Use 18AWG to 14AWG wire.

Note: If using 4-wire detectors, refer to Step 4 (page 9). The "RMT +" output used can supply up to 500MA of filtered, regulated 24VDC.

Max. loop line resistance for each circuit is 50 ohms if 2-wire detectors are used.

Alarm-Notification Appliance Wiring

Alarm-notification appliances — Horns, bells and visual units.

Wiring — 2-wire circuit terminating with a 10K end-of-line resistor. Use 18AWG to 14AWG wire.

Note: Because the system's total signal power is 2A, the number of notification appliances and the wire length that can be used in the notification circuit is limited. Refer to Table 1 to determine the maximum number of notification appliances and the total wire length that can be used in the notification circuit.

TABLE 1

NUMBER OF DEVICES	MAX. WIRE DISTANCE TO LAST DEVICE IN FEET		
	18 AWG	16AWG	14AWG
1	2349	3735	5940
2	1566	2490	3960
3	1198	1904	3029
4	955	1518	2415
5	783	1245	1980
6	681	1083	1722
7	602	958	1524
8	526	836	1330
9	479	761	1211
10	438	697	1108
11	400	636	1012
12	374	595	946
13	335	534	849
14	314	500	795
15	293	466	742
16	281	448	712
17	266	423	673
18	253	403	641

SYSTEM WIRIING SPECIFICATIONS — Continued

Auxiliary Alarm Relay Contacts (If Used)

Devices — Damper and fan controls, smoke door releases, elevator control, etc.

Source — External 30VAC/30VDC @ 2A, dependent upon devices that are used.

Wiring — Two Form C contacts available which transfer upon automatic alarm. Use 18AWG to 14AWG wire.

Trouble Relay Contacts (If Used)

Devices — Horns, bells, lights, etc.

Source — External 30VAC/30VDC dependent upon devices that are used. Max. load is 2A resistive.

Wiring — One Form C contact available which transfers upon a trouble condition. Use 18AWG to 14AWG wire.

INSTALLATION CHECK LIST (REFER TO WIRING DIAGRAM 841-610)

This section provides a systematic method for installing the system. Upon completion of a procedural step, place a check mark in the appropriate box in the left column.

If a problem occurs with the installation, refer to the appropriate page listed in the right column of the checklist. The information found on that page will provide a detailed description of a specific part of the installation. If your problem is not resolved, contact your local Simplex Branch Office (listed in the Yellow Pages under Fire Alarm).

If you wish, you may go directly to the detailed instructions to install the system (Page 8).

INSTALLATION CHECK LIST

☐	Procedure		DETAILED INSTRUCTION SEE PAGE(S)
☐	1.	Mount control panel. If using optional modules, battery meter module and/or alarm relay module, mount them using the instructions supplied with each module.	8
☐	2.	If using external battery cabinet, install it.	8
☐	3.	Install peripheral devices and connect end-of-line resistors across terminals of the last device in the notification-appliance circuit and initiating-device circuits used.	9
☐	4.	Check building (system) wiring for absence of voltage, opens, and shorts.	10
Steps 5 through 21 describe the connections to the panel's terminals.			
☐	5.	Connect ground wire to green ground screw.	11 (Step 1A)
☐	6.	Connect notification-appliance circuit to TB2-5 (SIG +) and TB2-6 (SIG –). (Connect circuit to transient suppressor or combination board if used [see pages 18 and 19]).	11 (Step 2)
☐	7.	Connect initiating-device circuits to appropriate terminals on TB4 (connect circuits to transient suppressor board, zone disconnect board, or transient suppressor/zone disconnect board if used [see pages 28 and 29]). If system contains coded manual station, connect coded stations to terminals designated for Zone 1 and cut jumper JW2.	11 (Step 3)

☐	Procedure		DETAILED INSTRUCTION SEE PAGE(S)
☐	8.	If 4-wire detectors are used, connect circuit for detectors to TB2-3 (AUX +) and TB2-4 (AUX –). Connect TB3-9 (RMT +) to TB2-2 (EXT PWR) and cut jumper JW3.	12 (Step 4)
☐	9	If using an auxiliary power supply, connect it to TB2-2 (EXT PWR) and TB2-4 (AUX –). Cut jumper JW3.	12 (Step 5)
☐	10.	If using a waterflow switch, connect as follows: Connect waterflow switch (N/O) to TB4-5 (ZONE3 +) and TB4-6 (ZON3 –). Connect tamper switch (N/C), if used, to TB4-7 (ZON4 +) and TB4-8 (ZON4 –). (Connect switches to transient suppressor board, zone disconnect board, or transient suppressor/zone disconnect board, if used [see pages 28 and 29]).	13 (Step 6)
☐	11.	If using a remote annunciator, connect it to terminals on TB2 and TB3. If supervision of annunciators is desired, and if alarm relay module is not being used, remove appropriate jumpers JW4, JW5, JW6 and JW7 (refer to Table 4), and appropriate resistors R84, R85, R86, and R87.	13 (Step 7)
☐	12.	If using an alarm relay module, connect it to terminals on TB2 and TB3. If using with an annunciator, DO NOT REMOVE INDICATED ANNUNCIATOR JUMPERS OR RESISTORS.	14 (Step 8)
☐	13.	If remote trouble devices are used, connect them to the trouble relay terminals (TB3)	14 (Step 9)
☐	14.	If remote alarm devices are used, connect them to the auxiliary relay terminals (TB5).	15 (Step 10)
☐	15.	Configure jumpers on JW1 in accordance with Figure 21	15 (Step 11)
☐	16.	If city circuit is used, connect it to TB5-1 (CITY+) and TB5-2 (CITY –)	16 (Step 12)
☐	17.	Connect AC power to transformer leads. DO NOT APPLY POWER.	16 (Step 13)
☐	18.	Connect batteries as indicated. DO NOT CONNECT WHITE BATTERY WIRES NOW. If used, connect battery meter module to batteries.	16, 17
☐	19.	Set DIP switch package SW1 in accordance with Table 4.	20
☐	20.	Apply system power.	21 and 22
☐	21.	Test the system.	28

INSTALLATION PROCEDURES

CONTROL PANEL MOUNTING (Refer to Figure 3)

1. Unlock and open panel door.
2. Unsnap and remove panel overlay from circuit card.
3. Remove knockout plugs on box assembly for wire entry.
4. At control panel mounting location, position control panel and secure with fasteners which are capable of supporting panel with batteries. Holes are provided at rear of box for securing panel to wall.
5. Enter external wires into control panel.
   - For semi-flush mounting, install trim panel and secure with six screws.
6. If using transient suppressor, zone disconnect, or combination transient suppressor/zone disconnect board, install board as follows:
   a. Secure hex spacers to studs on box assembly.
   b. Align board with spacers and secure with four screws.
   c. Connect cable to board and control panel as shown (blue edge of cable should line up with pin 9 on each connector).
7. If using external battery cabinet, mount it using the instruction provided with the cabinet. The battery cabinet should be close-nippled to the control panel (maximum two feet apart).
8. If using battery meter module or alarm relay module, mount it using the instructions provided with the module. Make sure the module is within six inches of the control panel.
9. PERFORM THIS STEP ONLY IF PANEL USES ALARM VERIFICATION.

   An alarm verification label (P/N 519-532) is provided with the control panel. In the space labeled "CIRCUIT (ZONE)," indicate the zones for which alarm verification is used. (Refer to Notes 2 and 3 on Page 26.)

   In the space labeled "CONTROL UNIT DELAY – SEC," enter the number "41."
10. If required by local codes, install the red 4001-9812 peel-and-stick applique on the control panel door using the instructions provided with the applique.

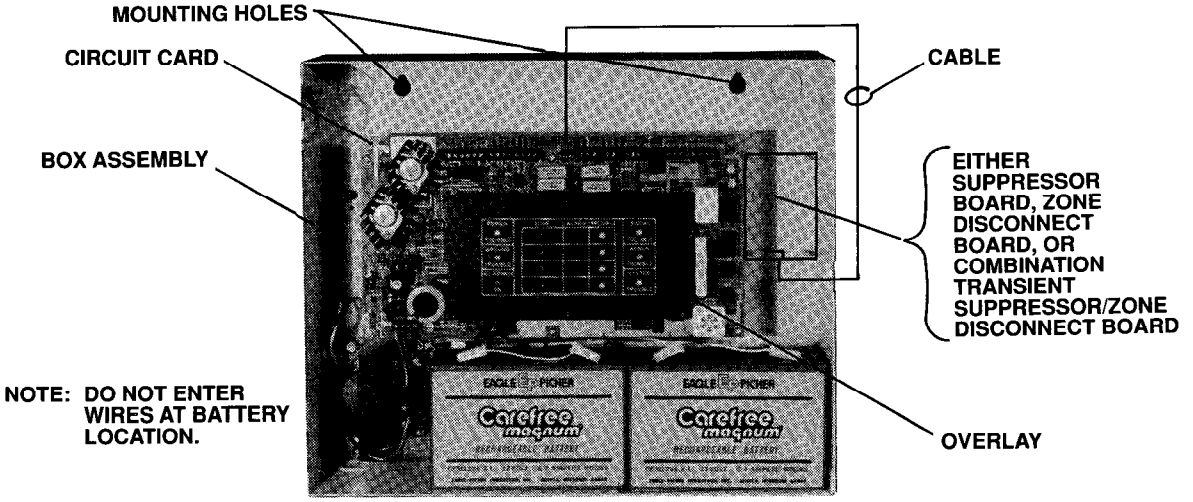


FIGURE 3

MOUNTING AND WIRING PERIPHERAL DEVICES (REFER TO WIRING DIAGRAM 841-610)

1. Determine mounting locations of peripheral devices and install system wires from the mounting location of each peripheral device to the control panel via junction boxes (if used):

2. Install wires for the panel's input power.

WARNING: DANGEROUS VOLTAGE (120VAC) MAY EXIST AT POWER INPUT. MAKE SURE PROPER CIRCUIT BREAKER OR FUSED DISCONNECT SWITCH AT BUILDING'S POWER DISTRIBUTION IS SET TO THE OFF POSITION.

3. Install all peripheral devices (detectors, horns, pull stations, etc.) and connect them to the appropriate wires (refer to the installation instructions packed with the devices). Connect a 3.3K end-of-line resistor (EOLR) across the terminals of the last device in each initiating circuit and mark the device accordingly (see Figure 4). Connect a 10K EOLR across the terminals of the last device in each notification appliance circuit and mark the device accordingly (see Figure 5).

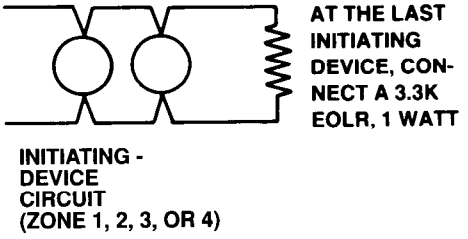


FIGURE 4

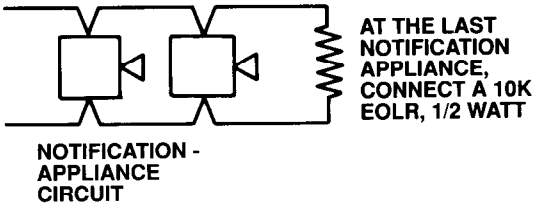


FIGURE 5

4. If any of the designated zone terminals on the panel do not have initiating devices connected to them, connect a 3.3K EOLR across those terminals (Fig. 6). (If using the transient suppressor, the zone disconnect, or combination board, see page 18.)

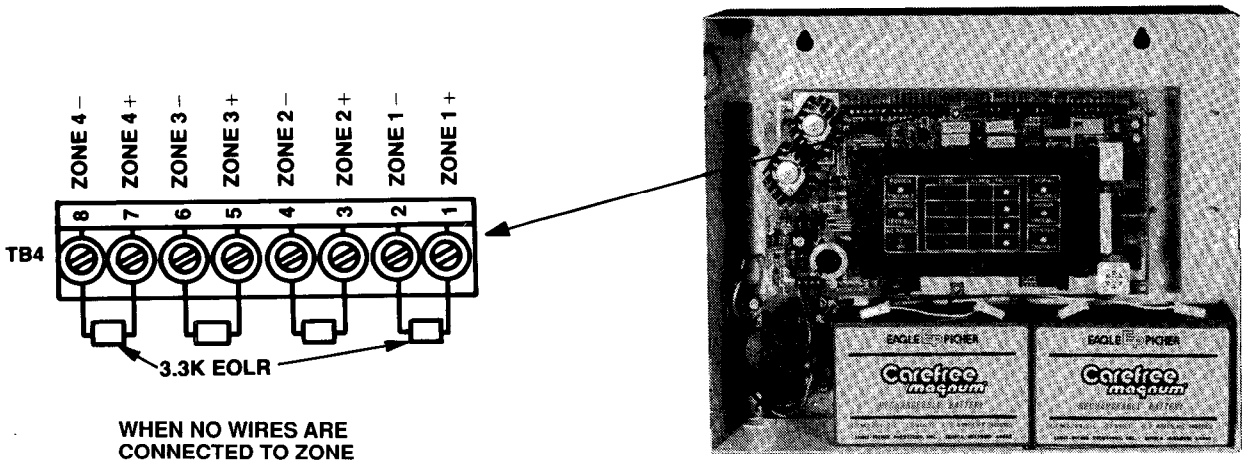


FIGURE 6

BUILDING WIRING CHECKOUT PROCEDURE (REFER TO WIRING DIAGRAM 841-610)

1. Check notification-appliance and initiating-device circuits for absence of voltage, shorts, or opens as follows:
   A. At the control panel, locate the notification-appliance or one of the initiating-device circuits.
   B. Set volt-ohmmeter to 300VAC.
   C. Place meter probes so that black probe is on "–" wire and red probe is on "+" wire.

      Volt-ohmmeter should read 0V (Fig. 7). If you read a voltage, check circuit wiring.
   D. Set volt-ohmmeter to 60VDC and repeat step 1C.
   E. Set volt-ohmmeter to OHMS X 10 and place meter probes as described in Step 1C.

      If reading indicates no continuity (open circuit, see Fig. 8) or a short circuit (see Fig. 9), locate and correct open/short in circuit.

      Note: If reading indicates an open circuit in an initiating circuit, make sure that all smoke detector heads are mounted and seated in their bases.
   F. Repeat Steps 1A thru 1E for all zone circuits.
2. Check system's other external circuits as follows:
   A. Locate wires for each of the systems circuit not yet tested.
   B. Check for voltage on circuit as described in Steps 1B thru 1D.
   C. Set volt-ohmmeter to OHMS X 10 and place meter probes across circuit being tested Reading should indicate an open circuit (Fig. 8).

      If reading indicates a short circuit (Fig. 9) or something less than infinity (∞), check circuit wiring.

Notes: 1. Normally-closed (N/C) relay circuits (auxiliary relays and trouble relay) will correctly read 0 ohms.

2. City circuit (if used) will read 15 to 5000 ohms depending on type of city connection.

   D. Repeat Steps 2A thru 2C for the external circuits not yet checked.

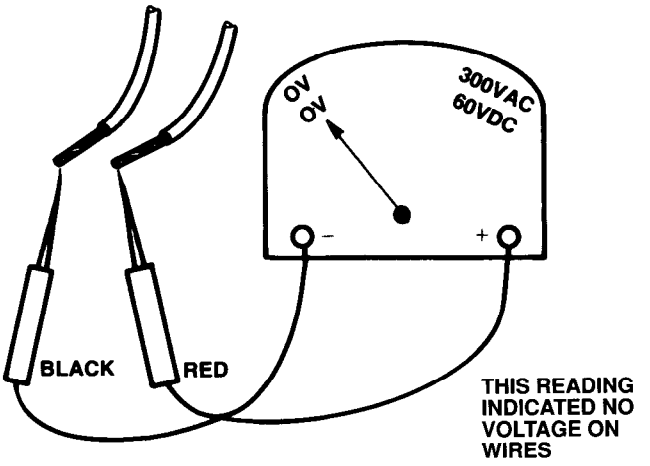


FIGURE 7

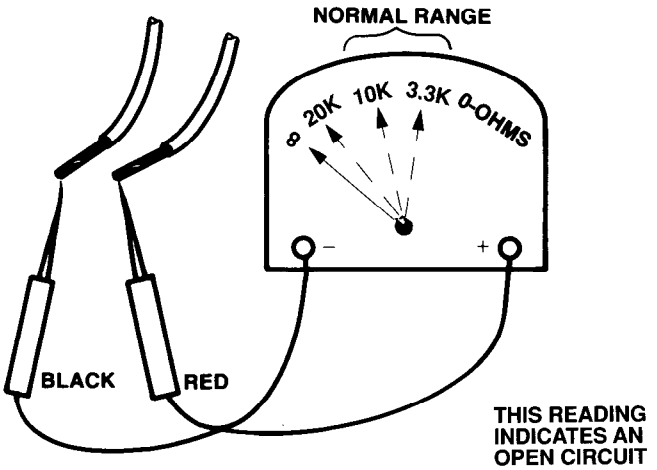


FIGURE 8

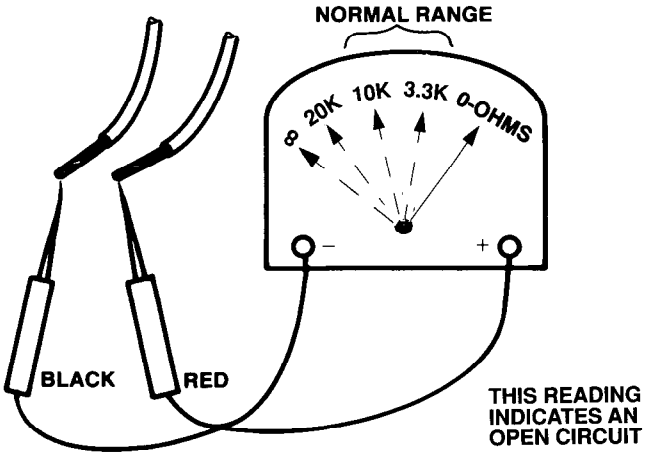


FIGURE 9

CONTROL PANEL TERMINAL CONNECTIONS (REFER TO WIRING DIAGRAM 841-610)

Note: The panel must be connected to a separate earth ground per Article 250 of the National Electrical Code (NFPA 70).

1. Connect earth ground detection circuit as follows:
   A. Connect ground wire to green ground screws (Fig. 10) on box assembly.
   B. Connect other end of ground wire to an approved earth ground (metallic cold water pipe, driven ground rod, etc.).

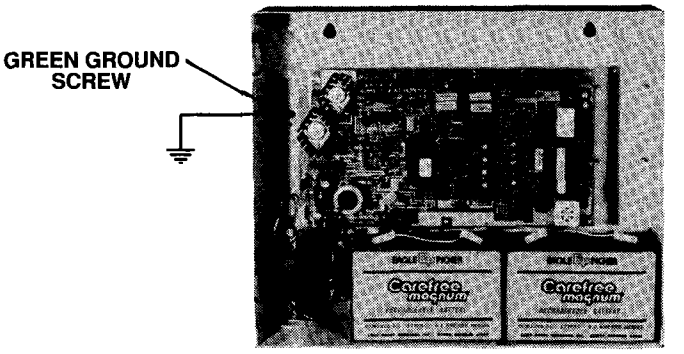


FIGURE 10

2. Connect indicating appliance circuit to TB2-5 (SIG +) and TB2-6 (SIG –) (Fig. 18).

Note: If the system contains the transient suppressor board, connect notification circuit to the suppressor board instead of the panel terminals (see Page 18).

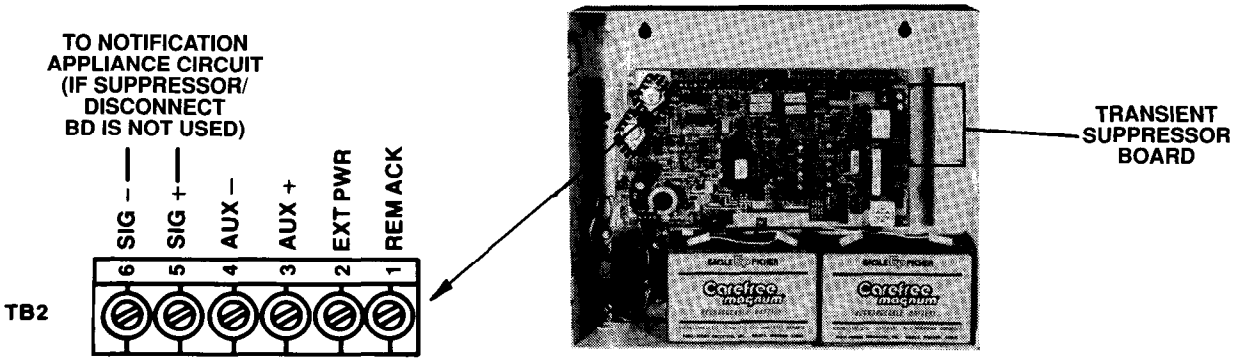


FIGURE 11

3. Connect initiating (zone) circuits to the following terminals (refer to Table 3 and Fig. 12).

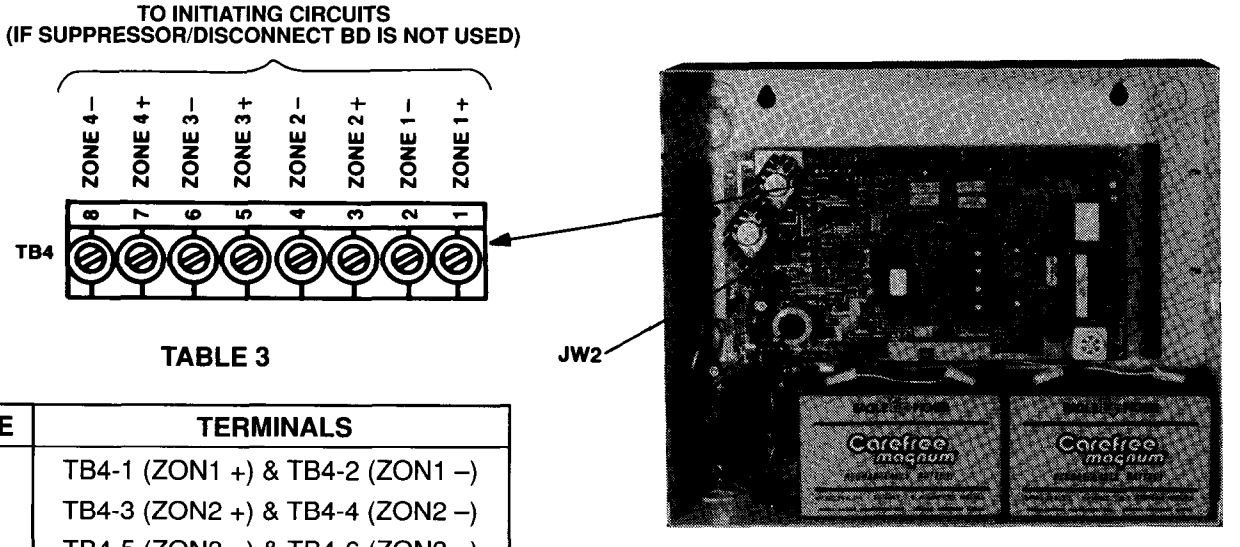


TABLE 3

ZONE	TERMINALS
1	TB4-1 (ZON1 +) & TB4-2 (ZON1 –)
2	TB4-3 (ZON2 +) & TB4-4 (ZON2 –)
3	TB4-5 (ZON3 +) & TB4-6 (ZON3 –)
4	TB4-7 (ZON4 +) & TB4-8 (ZON4 –)

FIGURE 12

Notes: 1. If the system contains the transient suppressor board, the zone disconnect board, or the transient suppressor/zone disconnect board, connect initiating device circuits to the suppressor or disconnect board instead of the panel terminals (see Page 18).

2. If any of the designated zone terminals do not have alarm devices connected to them, a 3.3K EOLR must be connected across those terminals (or the appropriate terminals on the suppressor board or zone disconnect board, if used).

3. If the system contains the waterflow/sprinkler feature, connect waterflow-initiating devices to terminals designated for zones 3 and 4 (see Page 13).

4. If the system contains coded manual stations, connect stations to zone 1 and cut jumper JW2 (Fig. 12).

4. If the system contains 4-wire detectors, do the following:

A. Connect a wire between the RMT + terminal (TB3-9 [Fig. 16, Page 14]) and the EXT PWR terminal (TB2-2).

B. Cut jumper JW3 on the control panel as shown in Figure 13.

C. Connect the wires used to power the detectors as shown in Figure 13.

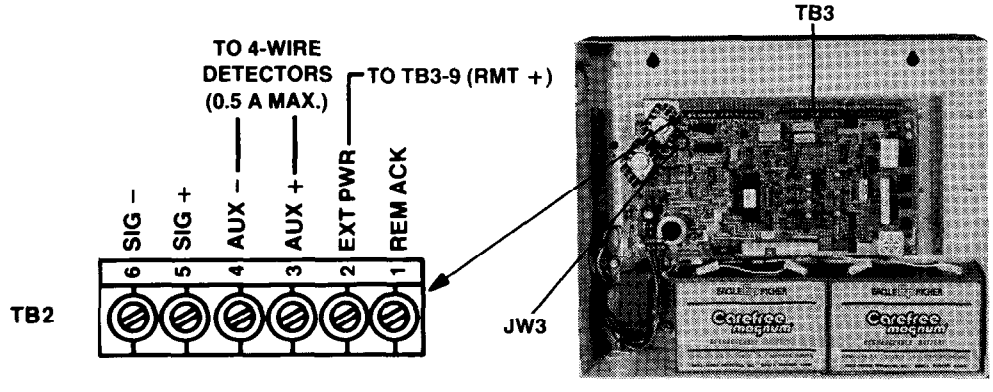


FIGURE 13

5. If using a 24VDC auxiliary power supply, cut jumper JW3 and connect the supply as shown in Figure 14. USE OF EXTERNAL POWER MAY VOID POWER LISTING ON THAT CIRCUIT.

CAUTION: Make sure that power is not connected to the auxiliary power supply throughout the installation. Its voltage (24VDC) may cause damage to the panel during the installation.

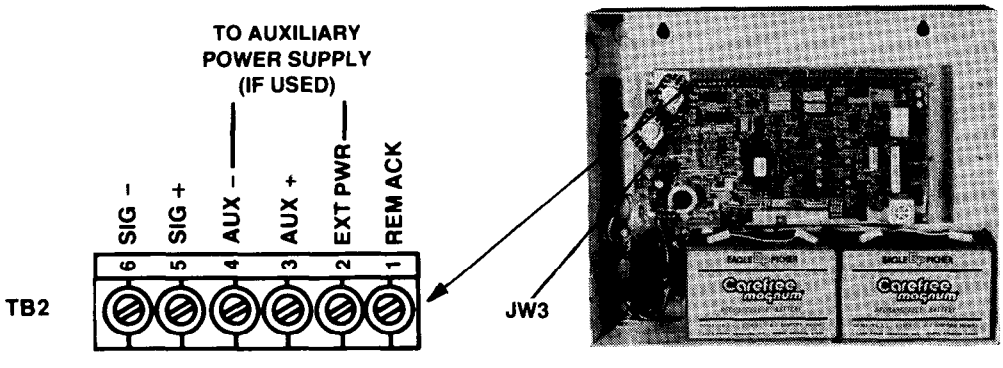


FIGURE 14

6. If waterflow/sprinkler switch circuits are used, connect as follows:

   A. Connect the waterflow switch (normally open) as shown in Figure 15. Make sure 3.3K resistor is connect to circuit as shown in wiring diagram 841-610.

   B. Connect the sprinkler tamper switch (normally closed) as shown in Figure 15. Make sure resistors (1K and 820 ohm, 1 watt) are connected to circuit as shown in wiring diagram 841-610.

Note: If the system contains the transient suppressor, zone disconnect or transient suppressor/zone disconnect board, connect the waterflow/sprinkler circuits to the board instead of the panel terminals (see Page 18).

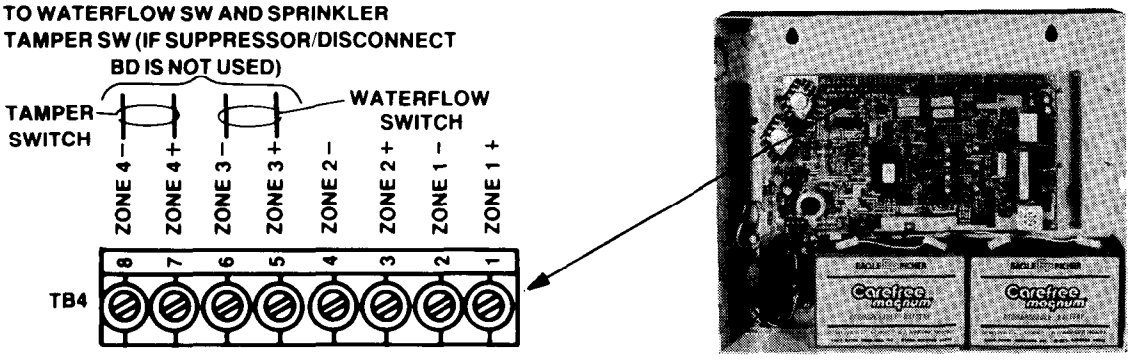


FIGURE 15

7. If using a remote annunciator or remote annunciator with remote trouble station and remote acknowledge switch, connect to panel as follows (see Fig. 16, page 14, for reference):

Notes: 1. Perform only Steps 7A through 7C if you are installing the 4601-9101 remote annunciator.

2. Perform Steps 7A through 7E if you are installing the 4601-9102 remote annunciator with trouble and acknowledge.

   A. Connect the annunciator " – " wires as indicated in Table 2.

   B. If supervision of annunciators is desired, remove the appropriate jumper(s) and resistor(s) indicated in Table 2.

   C. Connect the RMT + wire to TB3-9 (RMT +).

   D. Connect the REM ACK wire to TB2-1 (REM ACK).

   E. Connect the TBL RMT wire to TB3-8 (TBL RMT).

TABLE 2

ZONE	TERMINAL	JUMPER REMOVED (See Caution Below)	RESISTOR REMOVED (See Caution Below)
1	TB3-4 (ANN1–)	JW4	R84
2 (if used)	TB3-5 (ANN2–)	JW5	R85
3 (if used)	TB3-6 (ANN3–)	JW6	R86
4 (if used)	TB3-7 (ANN4–)	JW7	R87

CAUTION: If alarm relay module is used, DO NOT REMOVE JUMPERS OR RESISTORS!

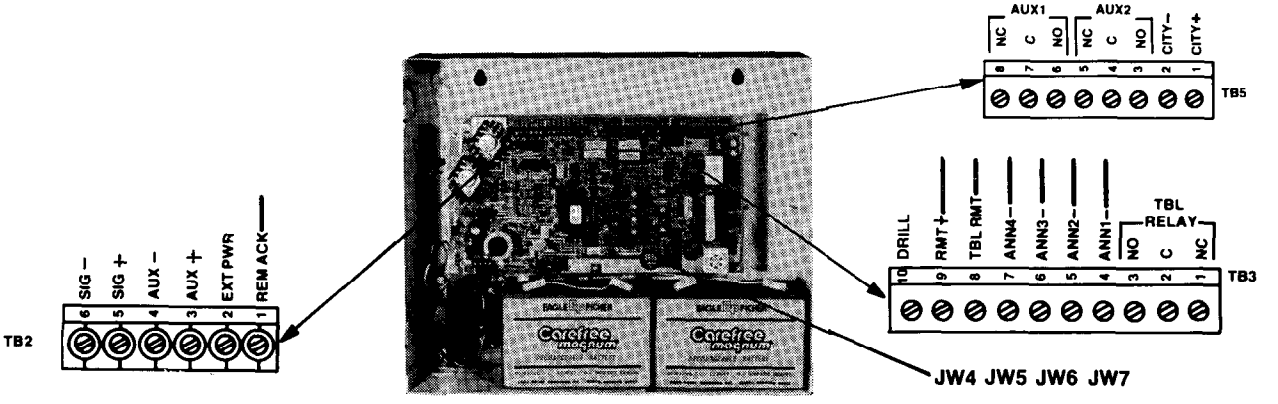


FIGURE 16

8. If 4100-9810 alarm relay module is used, connect it to TB2, TB3, and TB5 on the panel as follows (refer to Figure 16):

   A. Connect the relay module's ANN1 wire (TB1-1) to TB3-4 (ANN1-).

   Connect the relay module's ANN2 wire (TB1-2) to TB3-5 (ANN2-).

   Connect the relay module's ANN3 wire (TB1-3) to TB3-6 (ANN3-).

   Connect the relay module's ANN4 wire (TB1-4) to TB3-7 (ANN4-).

   B. Connect the relay module's AUX- wire (TB2-8) to TB2-4 (AUX-).

   Connect the relay module's AUX+ wire (TB2-7) to TB5-6 (NO of AUX1).

   C. Connect a wire from the panel's RMT+ (TB3-9) to TB5-7 (C of AUX1).

   D. Refer to wiring diagrams 841-610 for information on connecting external devices.

9. If remote trouble devices are used, connect them to trouble relay as follows (Refer to Fig. 17):

   The trouble relay may be used to operate external circuits. These external circuits may contain horns, bells, lights, or other devices associated with fire alarm systems.

   Notes: 1. Trouble relay activates upon a trouble condition.

   - *Trouble silence switch activation turns off the trouble relay.*

   2. Trouble relay contacts are Form C dry contacts, and are rated 2A maximum at 30VAC/30VDC (resistive rating).

   A. Connect positive (DC) or hot (AC) lead of voltage source to TB3-2 (the common [C] contact of the trouble relay).

   B. If devices are to be turned on during a trouble condition, connect lead from remote devices to TB3-3 (the normally open [N/O] contact of the trouble relay); if devices are to be turned off during a trouble condition, connect lead from remote devices to TB3-1 (the normally closed [N/C] contact of the trouble relay.

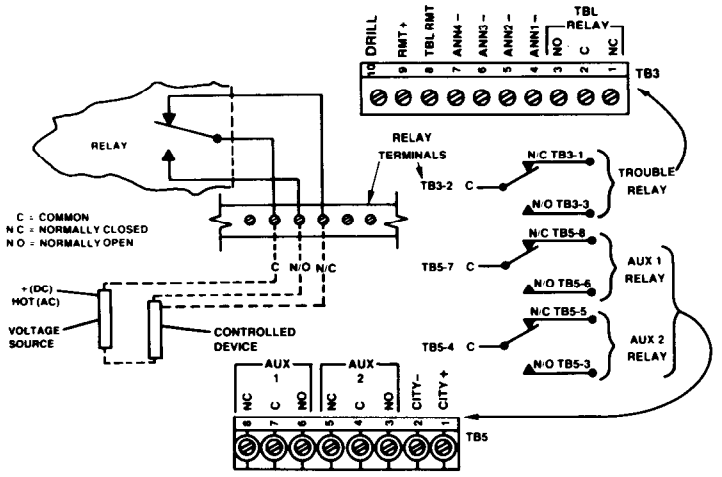


FIGURE 17

10. If remotely controlled devices are used, connect them to auxiliary master alarm relay as follows (refer to Fig. 17):

    The auxiliary relay may be used to operate external circuits. These external circuits may contain lights, fan controls, door releases, or other devices associated with fire alarm systems.

Notes: 1. Relay will activate upon alarm.

2. Auxiliary relay contacts are Form C dry contacts and are rated 2A maximum at 30VAC/30VDC (resistive rating).

A. Connect positive (DC) or hot (AC) lead of voltage source to TB5-7 (the common [C] contact of the AUX 1 relay).

B. If devices are to be turned on during alarm, connect lead from remote devices to TB5-6 (the normally open [N/O] contact of the AUX 1 relay). If devices are to be turned off during alarm, connect lead from remote devices to TB5-8 (the normally closed [N/C] contact of the AUX 1 relay).

C. Repeat steps 1 thru 3 for the AUX 2 relay (if used). Use appropriate terminals TB5-4 (common). TB5-3 (normally open) and TB5-5 (normally closed).

City Connections

11. Configure jumper JW1 as shown in Figure 18. (If unable to determine type of monitoring method being connected to the panel, ask the municipal monitoring facility.)

Note: Jumper JW1 is a header plug with plug-in jumpers. This plug is used to configure the system when the city feature is not used — or when using reverse polarity, local energy master box, or shunt city connections.

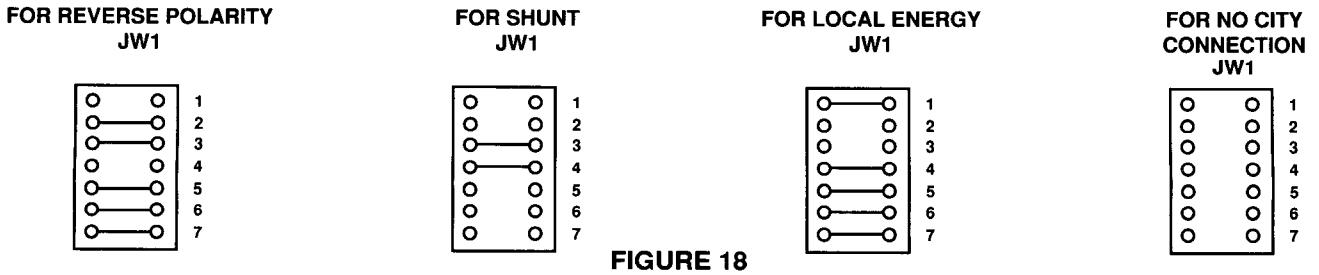


FIGURE 18

CONTROL PANEL TERMINAL CONNECTIONS — Continued

12. If using a city circuit (municipal monitoring facility), connect it as shown in Figure 19.

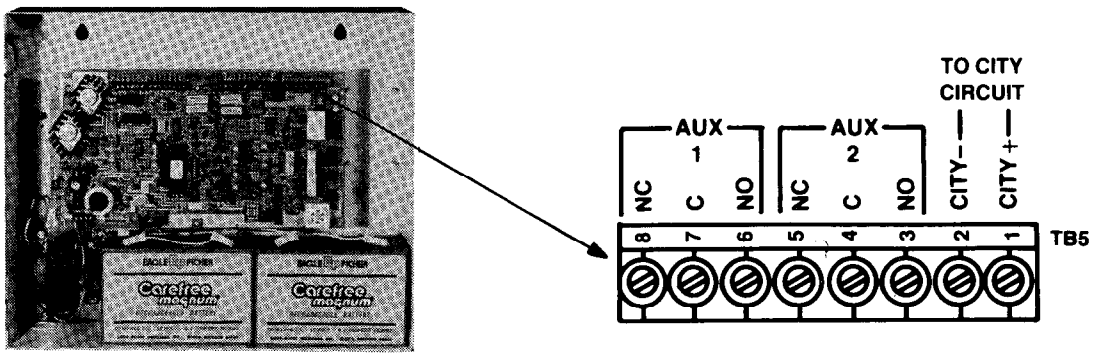


FIGURE 19

WARNING: DANGEROUS VOLTAGE (120VAC) MAY EXIST AT POWER INPUT. MAKE SURE PROPER CIRCUIT BREAKER OR DISCONNECT SWITCH AT BUILDING'S POWER DISTRIBUTION IS SET TO THE OFF POSITION.

AC Power Connection

The -9403 control panel must be connected to 120V 60Hz power, and all 120VAC wires must be routed separately from other wires in the control panel. (220/240V 50Hz is used if your system is a 4001-9404).

13. Connect black power lead (hot) to black lead from transformer input. Connect white power lead (neutral) to white lead from transformer input (Fig. 20).

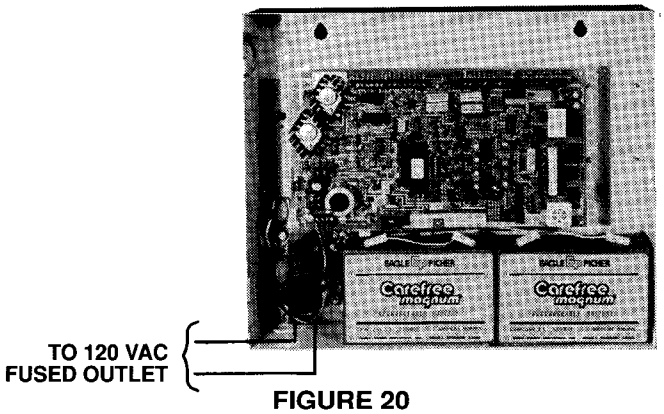


FIGURE 20

14. PERFORM THIS STEP ONLY IS USING THE BATTERY METER MODULE.

    Install the battery meter module using the instructions provided with it. Discard the harness shipped with the control panel and use the harness supplied with the meter module.

    Connect the battery meter module to the batteries as shown in Figure 21A. DO NOT CONNECT WHITE BATTERY JUMPER.

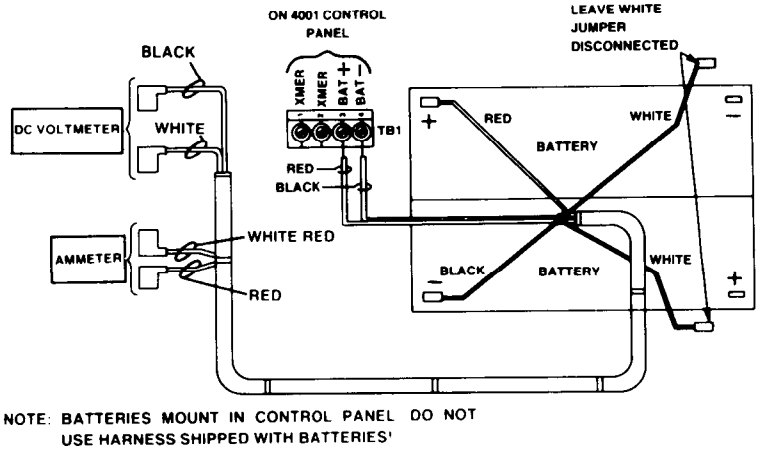


FIGURE 21A

Note: If using 18Ah batteries in an external cabinet without meter module, proceed to Step 16.

15. Connect battery to control panel as follows:

CAUTION: Check all battery connections carefully for polarity. *REVERSED CONNECTIONS MAY DAMAGE EQUIPMENT.*

A. Connect red wire of battery harness (without connector) to TB1-3 (BAT +). Connect black wire (without connector) to TB1-4 (BAT –). See Figure 21B.

B. Place two 12V batteries in box assembly as shown in Figure 21B.

C. Connect red wire of battery harness (with connector) to positive (+) terminal of one battery. Connect black wire of battery harness (with connector) to negative (–) terminal of other battery. See Figure 21B.

CAUTION: Do not connect the white jumper wire to battery terminals now. *BATTERY POWER MAY CAUSE DAMAGE TO EQUIPMENT DURING INSTALLATION.*

16. *PERFORM THIS STEP ONLY IF 18Ah BATTERIES ARE BEING USED WITHOUT BATTERY METER MODULE IN AN EXTERNAL BATTERY CABINET.*

A harness is provided that extends from the battery cabinet to the control panel. Discard the harness supplied with the control panel and use the harness supplied with the battery cabinet. Connections are described below. Note that you must run the harness through the knockout in the battery cabinet closest to the control panel, and up to the battery terminal (TB1).

CAUTION: Check all battery connection carefully for polarity. *REVERSED CONNECTIONS MAY DAMAGE EQUIPMENT.*

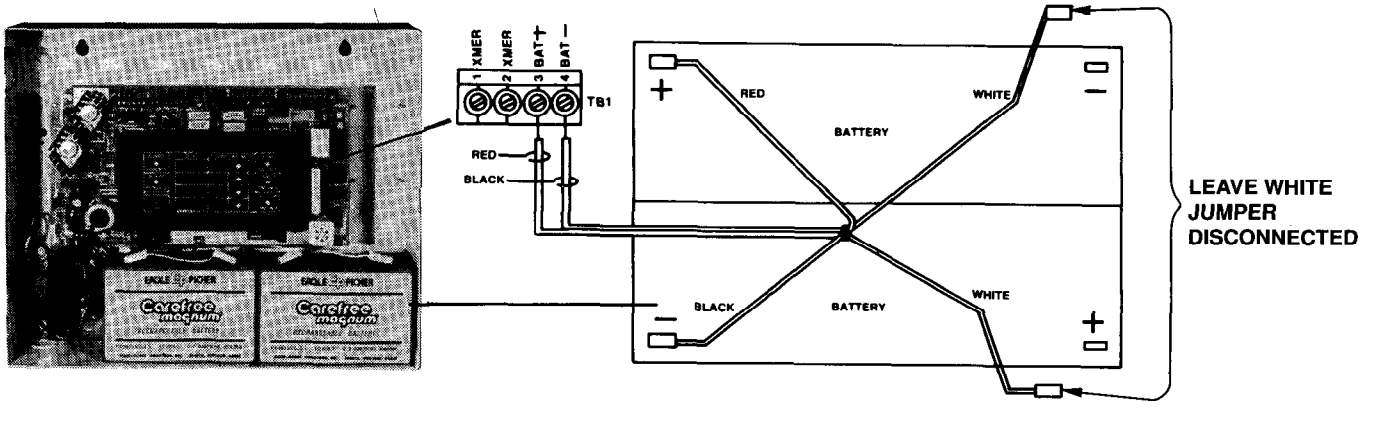
Connect battery to control panel as follows:

A. Connect red wire of battery harness (without connector) to TB1-3 (BAT +). Connect black wire (without connector) to TB1-4 (BAT–). See Figure 21B.

B. Place two 12V batteries in box assembly.

C. Connect red wire of battery harness (with connector) to positive (+) terminal of one battery. Connect black wire of battery harness (with connector) to negative (–) terminal of other battery. See Figure 21B.

CAUTION: Do not connect the white jumper wire to battery terminals now. *BATTERY POWER MAY CAUSE DAMAGE TO EQUIPMENT DURING INSTALLATION.*



NOTE: IF BATTERIES ARE IN EXTERNAL CABINET, ROUTE HARNESS THROUGH KNOCKOUT CLOSEST TO CONTROL PANEL.

FIGURE 21B

TRANSIENT SUPPRESSOR, ZONE DISCONNECT, OR COMBINATION TRANSIENT SUPPRESSOR/ZONE DISCONNECT BOARD TERMINAL CONNECTIONS (REFER TO WIRING DIAGRAM 841-610 AND FIGURE 22)

Note: Perform Steps 1 through 4 if the system is using the transient suppressor board or combination board.

Perform only Steps 2 through 4 if the system is using the zone disconnect board.

1. Connect notification appliance circuit to the following terminals on the transient suppressor board: TB1-9 (SIG +) and TB1-10 (SIG –).

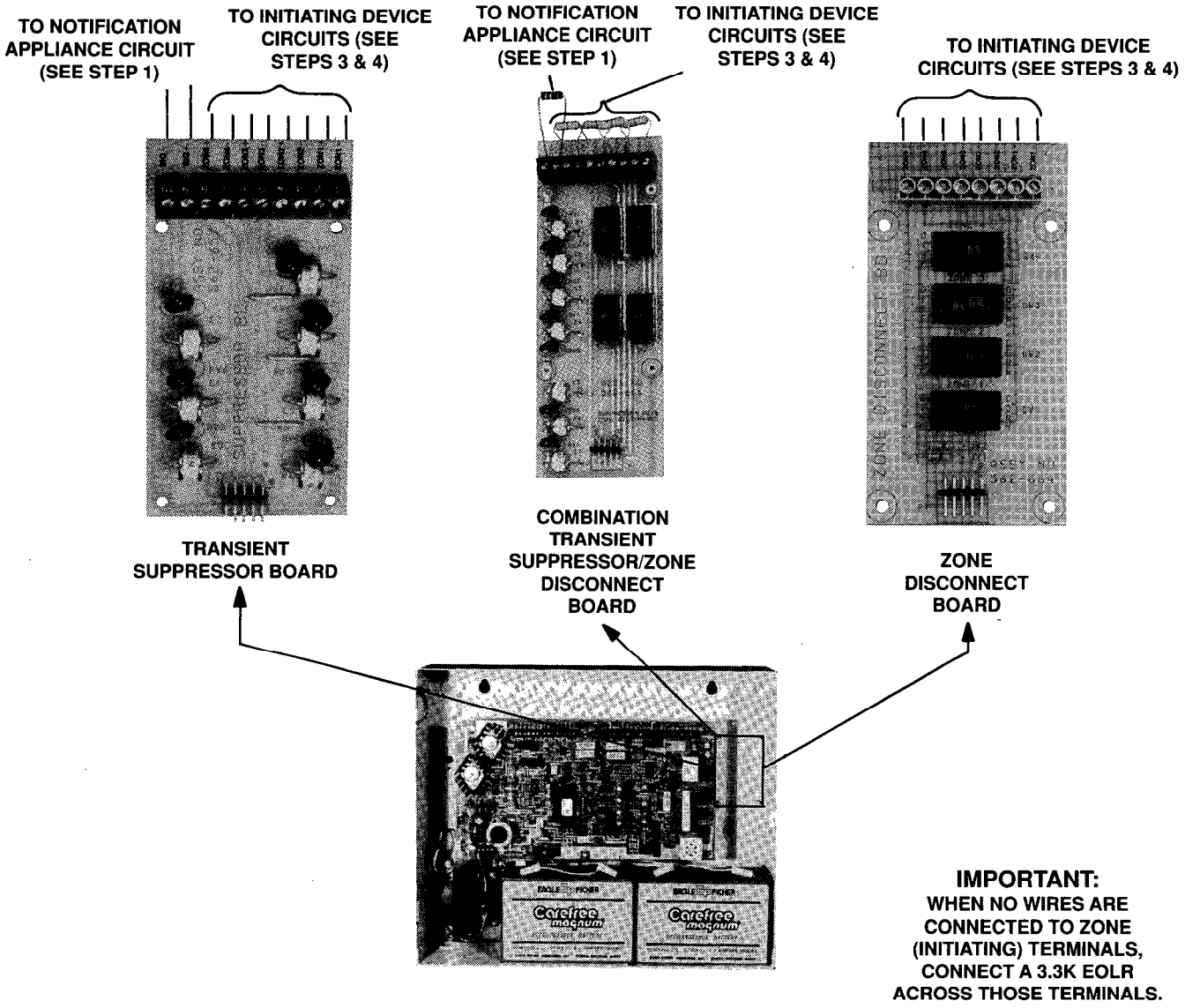


FIGURE 22

2. (If not already done) Route ribbon cable from connector P1 on board to connector P1 on control panel. Ensure that the side of the cable marked in dark blue lines up with pin 9 on each P1.

3. Connecting initiating device circuits to the following terminals (refer to Table 3):

Notes: 1. If any of the designated zone terminals on the suppressor or disconnect board do not have initiating devices connected to them, a 3.3K EOLR must be connected across these terminals.

2. If the system contains the waterflow/sprinkler feature, connect waterflow-initiating devices to the suppressor or disconnect board terminals designated for zones 3 and 4 (see Step 4).

TABLE 3

ZONE	TERMINALS
1	TB4-1 (ZON1 +) & TB4-2 (ZON1 –)
2	TB4-3 (ZON2 +) & TB4-4 (ZON2 –)
3	TB4-5 (ZON3 +) & TB4-6 (ZON3 –)
4	TB4-7 (ZON4 +) & TB4-8 (ZON4 –)

4. Connect waterflow/sprinkler circuits (if used) to suppressor, disconnect, or combination board as follows:

   A. Connect the waterflow switch (normally open) to TB1-5 (ZON3 –) and TB1-6 (ZON3 +).

   B. Connect the sprinkler tamper switch (normally closed) (if used) to TB1-7 (ZON4 –) and TB1-8 (ZON4 +).

SYSTEM PROGRAMMING

Notes: 1. DIP switch package SW1 programs the system for general alarm operation or for the options listed in Table 4.

2. If no options are desired, make sure all DIP switches are set to the ON position.

3. When the system has operating power, you must RESET it when switch positions are changed.

1. Go to the "OPTIONS" column in Table 4 and select one option from each of the table's six groups: TEST, CODING, CODED INPUT ON ZONE 1, WATERFLOW/SPRINKLER OR SILENCE INHIBIT, ALARM VERIFICATION or SIGNAL CUTOUT (Fig. 23).

2. Set DIP switch package SW1 in accordance with the options selected.

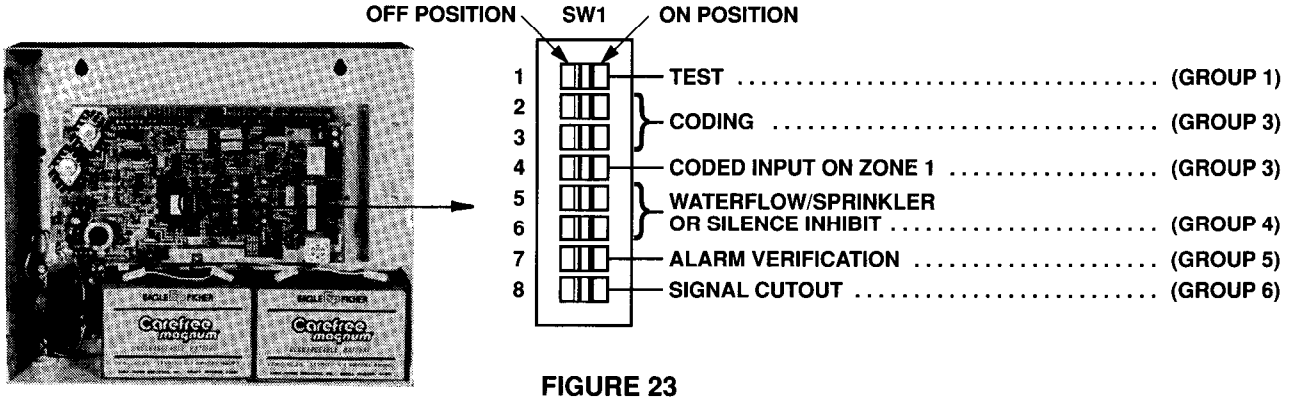


FIGURE 23

TABLE 4

	OPTIONS	SW1-1	SW1-2	SW1-3	SW1-4	SW1-5	SW1-6	SW1-7	SW1-8
GROUP 1	**TEST (Select 1)**								
	Normal Operation (no test)	ON							
	Installation Test	OFF							
GROUP 2	**CODING (Select 1)**								
	Normal Operation (notification appliances operate continuously)		ON	ON					
	Temporal Code (notification appliances .5 sec on, .5 sec off, .5 sec. on, .5 sec off, .5 sec on, 2.5 sec off, repeat)		ON	OFF					
	March Time (operate .25 sec on, .25 sec off, repeat)		OFF	ON					
	Simple Coding (notification appliance pulses indicate zone in alarm)		OFF	OFF					
GROUP 3	**CODED INPUT ON ZONE 1 (Select 1)**								
	Coded Input On Zone 1				OFF				
	No Coded Input On Zone 1				ON				
GROUP 4	**WATERFLOW SPRINKLER OR SILENCE INHIBIT (Select 1)**								
	Neither Option Selected					ON	ON		
	Waterflow Sprinkler					ON	OFF		
	Silence Inhibit for 1 Minute (notification appliances cannot be silenced for 1 minute)					OFF	ON		
	Silence Inhibit for 3 Minutes					OFF	OFF		
GROUP 5	**ALARM VERIFICATION (Select 1)**								
	Alarm Verification Not Selected							ON	
	Alarm Verification Selected							OFF	
GROUP 6	**INDICATING APPLIANCE CUTOUT (Select 1)**								
	Notification Appliance Cutout Not Selected								ON
	Notification Appliance Cutout (signals stop sounding 10 minutes after alarm)								OFF

Note: For General alarm, all switches should be ON.

Note: Always RESET the system after programming or reprogramming.

SYSTEM POWER-UP

Important: Notify appropriate personnel (building occupants, fire department or monitoring facility, etc.) of power-up.

1. Apply system power for several seconds, then turn power off.

2. At large circuit board, check fuses (Fig. 24) and at building's power distribution, check system circuit breaker or fuse.

   If fuses/circuit breaker are OK, go to Step 3.

   If fuses have opened or circuit breaker has tripped, check field wiring as described on page 10. (Make sure power is removed from panel and appropriate circuit is disconnected from panel when checking circuit.) Repeat Steps 1 and 2 above. If fuses continue to open or circuit breaker continues to trip, contact your local Simplex Branch Office (listed in the Yellow Pages under Fire Alarm).

3. Apply system power and press SYSTEM RESET switch (Fig. 24). Observe panel indicators:

   - The SYSTEM TROUBLE LED, SIGNAL TROUBLE LED, and the four ZONE ALARM and TROUBLE LED'S illuminate for five seconds. The tone device sounds for 1/2 second, and the green AC POWER ON LED illuminates continuously.

Note: If only POWER TROUBLE, SYSTEM TROUBLE and AC POWER ON LEDs are illuminated and the tone device is sounding, set the TROUBLE SILENCE switch to the down position and go to Step 4.

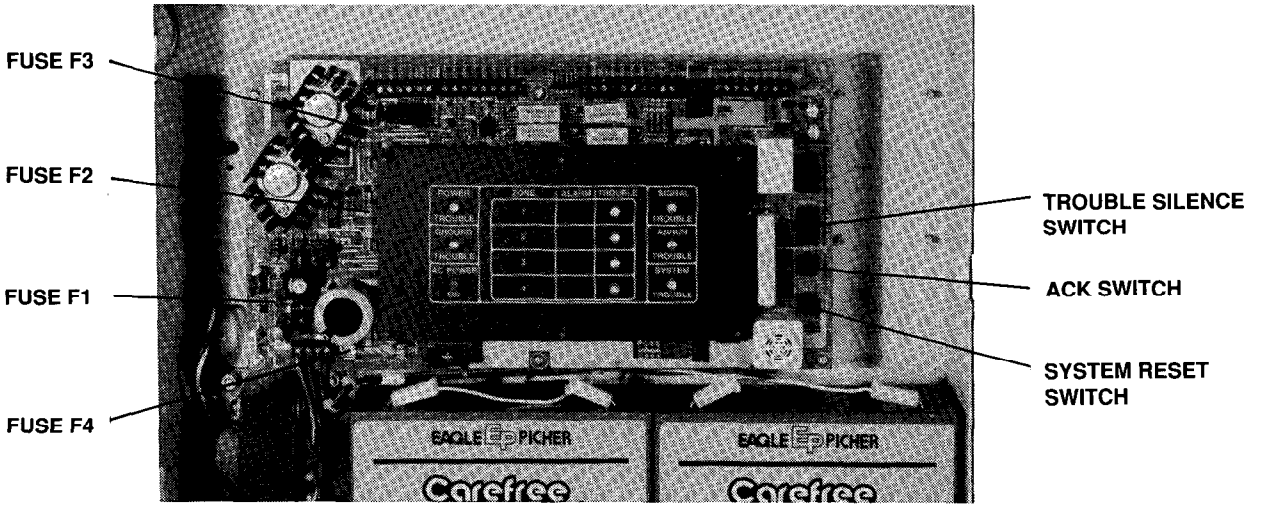


FIGURE 24

If any other system ALARM or TROUBLE LEDs are illuminated, or it system's green AC POWER ON LED is not illuminated, perform the following:

Check field wiring as described on Page 10. (Make sure power is removed from panel and appropriate circuit is disconnected from panel when checking circuit.) Repeat Steps 1 through 3 above. If the ALARM or TROUBLE LEDs (except POWER TROUBLE and SYSTEM TROUBLE) are illuminated or the system's green AC POWER ON LED is not illuminated, contact your local Simplex Branch Office (listed in the Yellow Pages under Fire Alarm).

SYSTEM POWER-UP (continued)

Note: If system shows continuous alarm, check for activate initiating devices (construction dust in a smoke detector can cause false alarms).

4. At battery harness, connect one end of the white jumper to positive terminal of one battery and other end to negative terminal of other battery (Fig. 25).

   - The POWER TROUBLE and SYSTEM TROUBLE LEDs go out and the tone device sounds.

5. Set the TROUBLE SILENCE switch back to the NORMAL (up) position.

6. To test the system for proper operation, perform the procedure on Page 28 (How to Test the System).

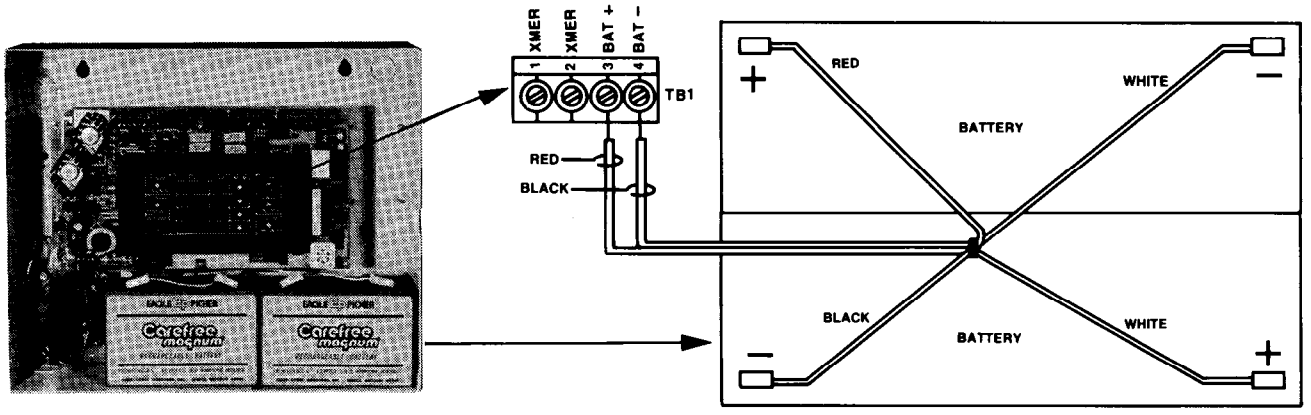


FIGURE 25

OPERATING INSTRUCTIONS

INTRODUCTION

The 4001 Fire Alarm System provides audible and visual indications during alarm conditions. When an alarm condition occurs, the system activates the notification appliances and flashes appropriate alarm LEDs on the control panel. *The system's notification appliances operate until you acknowledge the alarm or reset the system.*

You do two things when you acknowledge an alarm condition:

- You silence the notification appliances.
- You change the flashing LEDs on the control panel to a steady illumination.

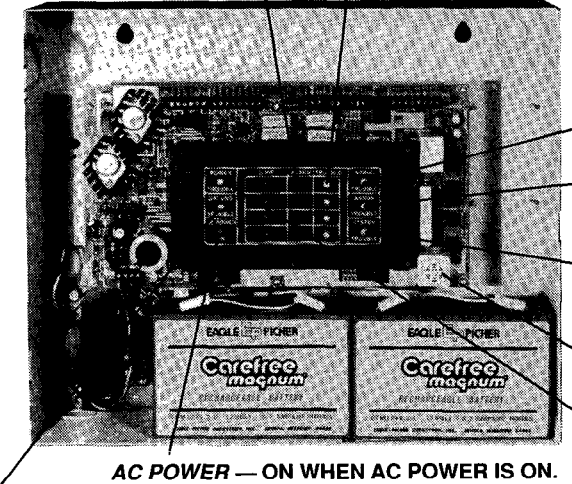
Note: If the system has been programmed to include certain options (see Page 24, Note 3), you cannot immediately silence the notification appliances or reset the system.

The system has *resound capability.* If — after an alarm has been acknowledged — another alarm occurs on another zone, the notification appliances will operate again.

The system can also be set up for *alarm verification,* which essentially verifies that a smoke detector is indeed in alarm. (See description of alarm verification on Page 26 for details).

The system constantly checks for electrical troubles (opens, shorts, grounds, abnormal city connections, power loss, low battery voltage, etc.). If a trouble condition occurs, the tone device on the panel sounds and the appropriate trouble LEDs illuminate to indicate the type of trouble.

The system contains the following LED indicators (Figure 26) and switches (Figure 27).



ALARM **— THE RESPECTIVE ZONE ALARM LED IS ON WHEN AN ALARM CONDITION EXISTS IN ANY OF THE ZONES.**

TROUBLE **— THE RESPECTIVE ZONE TROUBLE LED IS ON WHEN AN OPEN EXISTS IN ANY OF THE INITIATING DEVICE CIRCUITS.**

SIGNAL TROUBLE **— ON WHEN SHORT OR OPEN IN A NOTIFICATION-APPLIANCE CIRCUIT OCCURS.**

ANNUNCIATOR TROUBLE **— ON WHEN OPEN IN ANY ANNUNCIATOR LINE OCCURS, OR WHEN ANNUNCIATOR LED FAILS.**

SYSTEM TROUBLE **— ON WHEN ANY TROUBLE LED IS ON. IF ON AND OTHER TROUBLE INDICATORS ARE OFF, INDICATES AN OPEN IN CITY CIRCUIT OR A REMOTE ACK SWITCH IN THE ON POSITION.**

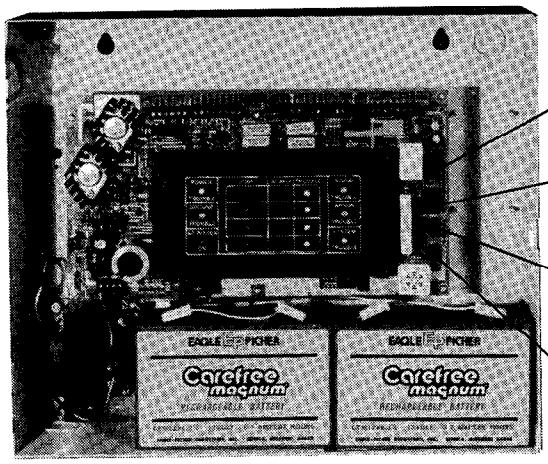
TONE DEVICE **— ON FOR ABNORMAL SYSTEM CONDITIONS.**

POWER TROUBLE **— ON FOR NO OR LOW INPUT VOLTAGE, LOW BATTERY VOLTAGE, OR WHEN BATTERIES ARE DISCONNECTED.**

AC POWER **— ON WHEN AC POWER IS ON.**

GROUND TROUBLE **— ON WHEN ANY CIRCUIT SHORTS TO EARTH.**

System Indicators
FIGURE 26



CITY DISCONNECT — WHEN SET TO THE DOWN POSITION, OR WHEN CITY IS DISCONNECTED FOR TEST PURPOSES OR SYSTEM MAINTENANCE.

TROUBLE SILENCE — WHEN SET TO THE DOWN POSITION, TONE DEVICE IS SILENCED DURING TROUBLE CONDITION. AFTER TROUBLE CONDITION CLEARS, TONE DEVICE WILL SOUND UNTIL SWITCH IS SET BACK TO THE UP POSITION.

ACKNOWLEDGE (ACK) — WHEN PRESSED, ALARM-NOTIFICATION APPLIANCES ARE SILENCED AND ZONE ALARM INDICATORS CHANGE FROM A FLASHING CONDITION TO A STEADY ILLUMINATION.

SYSTEM RESET — WHEN PRESSED, RESETS SYSTEM FOLLOWING AN ALARM CONDITION.

System Switches
FIGURE 27

HOW TO RECOGNIZE NORMAL, TROUBLE, AND ALARM INDICATIONS

Normal Condition

- The green AC POWER ON indicator is on.
- All other indicators are off.

Trouble Condition

- Tone device is sounding a steady tone.
- One or more amber indicators are on.

Alarm Condition

- The notification appliances throughout the building are operating.
- One or more red ALARM indicators are flashing indicating the zone(s) reporting the alarm.

HOW TO OPERATE THE PANEL DURING AN ALARM CONDITION

Important: Consult local code authorities for specific actions to be taken during an alarm condition.

- When appropriate, unlock and open the panel door.
- To silence notification appliances, press the ACK (acknowledge) switch (Fig. 27).

Notes:

1. Upon pressing the ACKNOWLEDGE switch, any red indicator that was flashing changes to a steady illumination.
2. If another alarm is reported from another zone, the notification appliances operate again and the red indicator representing the new zone in alarm flashes (until the new alarm is acknowledged).
3. The following options will affect the acknowledge feature as follows:
   - Coded Input On Zone 1 — notification appliances cannot be silenced when zone 1 is in alarm; however, flashing indicators change to a steady illumination when acknowledged. (Notification appliances silence automatically upon code completion.)
   - Silence Inhibit — notification appliances cannot be silenced until the specified time period has elapsed (1 or 3 minutes).
   - Waterflow/Sprinkler — notification appliances cannot be silenced if water is flowing in the sprinkler system.

HOW TO RESET THE FIRE ALARM SYSTEM FOLLOWING AN ALARM CONDITION

- When the alarm situation has been cleared, restore or replace all affected alarm-initiating devices (pull stations and detectors), if required, in accordance with the instructions provided with each device.
- Press the SYSTEM RESET switch (Fig. 27) until LEDs illuminate.

  Note: The following options will affect the RESET feature as follows:

  - Silence Inhibit — you cannot RESET the system until the specified time period has elapsed.
  - Waterflow/Sprinkler — you cannot RESET the system if water is flowing in the sprinkler system.

HOW TO OPERATE THE PANEL WHEN WATER IS FLOWING IN THE SPRINKLER SYSTEM (OPTIONAL)

When water is flowing in the sprinkler system, the following indications exist:

- The sprinkler ALARM (ZONE 3) red indicator is flashing.
- The notification appliances are operating.

After the fire has been extinguished and the water to the sprinkler system has been shut off, the following indications exist:

- The sprinkler ALARM (ZONE 3) red indicator is on steady.
- The tamper switch ALARM (ZONE 4) red indicator is on steady (indicating that the water to the sprinkler system has been shut off).
- The notification appliances are still operating.
- The tone device is sounding a slow pulse (indicating that the water to the sprinkler system has been shut off).

If the water to the sprinkler system has been shut off, proceed as follows:

- At the panel, press the ACK switch (Fig. 27) notification appliances are silenced, the sprinkler ALARM (ZONE 3) red indicator turns off, the tone device continues to sound a slow pulse, and the tamper switch ALARM (ZONE 4) indicator remains on).

  Note: Tone device cannot be silenced when water to the sprinkler system has been shut off.
- Restore or replace sprinkler heads in accordance with the instructions provided with the devices.
- *Restore water to sprinkler system in accordance with the instructions provided with the sprinkler system* (this causes the tamper switch ALARM (ZONE 4) indicator to flash and the tone device to pulse rapidly).
- Press the RESET switch (Fig. 27) until LEDs illuminate (system returns to its normal condition).

Note: Until the sprinkler system is fully recharged, waterflow may be detected by the panel and the fire alarm system may go into alarm again. Therefore, you may have to repeat this procedure several times while recharging the sprinkler system.

WHAT TO DO IN CASE OF TROUBLE

- Notify appropriate personnel. (If the system is connected to the city, notify the fire department monitoring facility.)
- Unlock and open panel door.
- If tone device is sounding, set TROUBLE SILENCE switch (Fig. 27 on Page 24) to its down position.

  Note: When the trouble has cleared, the tone device will sound again as a reminder to set the TROUBLE SILENCE switch back to its normal position.

Corrective Actions

- Observe TROUBLE indicators and perform the corrective action outlined in Table 5 (see Page 27).
- When the trouble clears, set TROUBLE SILENCE switch to its NORMAL (up) position.
- If trouble is on the panel's circuit board, contact your local Simplex Branch Office (listed in the Yellow Pages under Fire Alarm).

Important: Any attempt to replace any components on the panel's circuit board voids the warranty.

CAUTION: 24VDC exists at control panel circuit board. This voltage may cause damage to equipment during fuse replacement, resistance measurements, or wire checks. When performing these activities, ensure that the battery jumper (white wire) is disconnected from the battery and that all AC power is removed from the system's panel and peripherals. When replacement or checks are complete, restore power (AC power first then batteries) and press RESET switch until the zone LEDs illuminate.

Note: When checking a suspected circuit, remove the circuit from the panel terminals (see Page 10, Building Wiring Checkout Procedure), and the system wiring diagram (841-610) provided with the panel.

ALARM VERIFICATION FEATURE (OPTIONAL)

The 4001 Fire Alarm System can be programmed for alarm verification (see Page 20, System Programming).

- Alarm verification works *only* with Simplex smoke detectors.

This feature requires the verification of any alarm initiated by a smoke detector, but allows contact devices (heat detectors and manual stations) residing in the same zone to initiate alarms upon activation. The feature works as follows:

a. If a smoke detector senses an alarm, the 4001 starts a 30-second timer, but otherwise ignores the alarm.

b. If, during the 30 seconds, no contact device in any zone (or smoke detector in another zone) activates, the zone enters a 15-second reset cycle.

c. Following the reset cycle, the 4001 enters a 120-second confirmation period. If, during this period, the smoke detector re-alarms (or another smoke detector in the same zone initiates an alarm) the 4001 alarms immediately.

d. If no alarms occur during the 120-second confirmation period, the 4001 automatically returns to normal operation.

Notes:

1. If, at any time during the above time period, a smoke detector in another zone (or contact device in any zone) activates, the 4001 alarms immediately.
2. If Zone 1 is used with the coded input option, then alarm verification will not work on Zone 1.
3. If Zones 3 and 4 use the sprinkler/waterflow options, then alarm verification will not work on Zones 3 and 4.

TABLE 5

SYMPTOM	CORRECTIVE ACTION
AC POWER ON indicator OFF.	Check system's 120 VAC circuit breaker at the building's power distribution box. Remove overlay (Fig. 4 on page 10) and check fuse F1 (Fig. 4). If F1 is open, contact Simplex for service. Check input wiring at TB1-1 (XMER) and TB1-2 (XMER).
GROUND TROUBLE and SYSTEM TROUBLE LEDS are on.	Individually remove each external wire from the control panel until the ground fault clears. Locate and repair ground fault.
POWER TROUBLE and SYSTEM TROUBLE LED are on.	If AC POWER ON LED is off, perform the corrective action specified for this symptom (see above). If AC POWER ON LED is on, check for AC brownout, battery voltage, and battery connections.
SYSTEM TROUBLE (only) is on.	Make sure CITY DISC switch is set to the CONNECT position. Check jumper JW1 configuration (see Figure 21 on page 25). Check city wires (if used) at TB5-1 (CITY +) and TB5-2 (CITY –). This may indicate a tripped city box. A remote ACK switch could also be on.
ANNUN TROUBLE and SYSTEM TROUBLE LEDs are on.	Check annunciator LEDs. Replace any bad LEDs. Check annunciator wiring (refer to page 20 and the publication provided with the annunciator).
SIGNAL TROUBLE and SYSTEM TROUBLE LEDs are on.	Remove wires from TB2-5 (SIG +) and TB2-6 (SIG –) or, if the suppressor board is used, TB1-9 (SIG +) and TB1-10 (SIG –) on the suppressor board. Then connect a 10K resistor across the terminals. If the indicators go out, check circuit wiring. If indicators remain on, see box below.
One or more of the ZONE LEDs and SYSTEM TROUBLE LED are on.	Remove wires from terminals associated with the zone indicated by the TROUBLE LED. Then connect a 3.3K resistor across the terminals (zone wires will be connected to the suppressor, disconnect or combination board, if used). Remove the resistors and reconnect the zone wiring after testing. If indicators go out, check circuit wiring. If indicators remain on, see box below.
System continuously indicates and alarm condition after a SYSTEM RESET and no fire condition exists.	Check for shorts in the zone circuit(s) associated with illuminated ALARM LED. Check peripherals in the zone circuit(s) (refer to the publication provided with each device).
System fails to initiate an alarm when an alarm-initiating device is activated.	Place a solid conductor (short) across the appropriate zone terminals. If the alarm is activated, check the alarm-initiating device (refer to publication provided with the device). If alarm is not activate, see box below.

If trouble condition persists, contact your local Simplex Branch Office (listed in the Yellow Pages under Fire Alarm).

HOW TO TEST THE SYSTEM (REFER TO NFPA 72)

Note: The system should be tested periodically. Check with local codes.

- Notify appropriate personnel. (If the system is connected to the city, notify the fire department or monitoring facility.)
- Unlock and open panel door.
- Unsnap and remove panel overlay (Fig. 28).
- Set DIP switch SW1-1 to the OFF position (Fig. 28) and press the RESET switch (Fig. 28) until the LEDs illuminate.
  - SYSTEM TROUBLE LED remains illuminated.

CAUTION: If using alarm relay module, disconnect the module's "AUX-" wire at control panel terminal TB2-3.

- Activate an alarm-initiating device (pull station or smoke detector). Repeat this step until all alarm-initiating devices have been activated or in accordance with local codes.
  - Notification appliances operate with code representing the zone in alarm. (After four seconds, system automatically resets to allow test of another device.)

Note: Auxiliary relays and city connection do not operate during test.

- Momentarily open, then reconnect any device wiring (initiating devices and notification appliances) to test for proper operation of the supervisory circuitry.
- Notification appliances operate continuously for four seconds if system has detected the wiring fault.

  Note: Do not open wiring on the first notification appliance. Disconnecting the first appliance opens the entire notification circuit and prevents the other appliances from operating.
- When test is complete, set DIP switch SW1-1 to the ON position and press the RESET switch until LEDs illuminate.

CAUTION: Reconnect alarm relay module "AUX-" wire at control panel terminal TB2-3.

- Replace panel overlay.
- Press the RESET switch after completing the test.
- Notify appropriate personnel that test is complete.

Important: Should the panel fail to respond as described during these test procedures, refer to page 26, "What to Do in Case of Trouble."

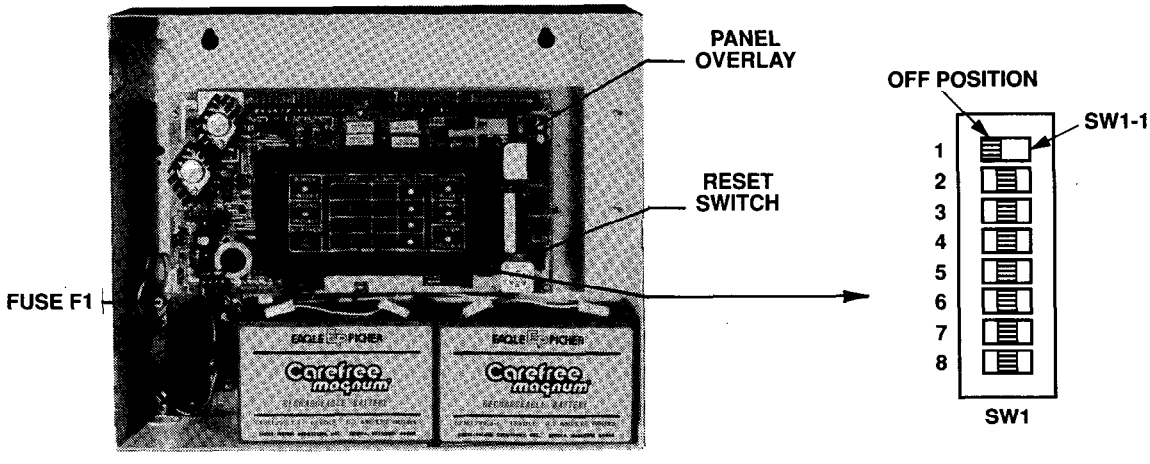


FIGURE 28

HOW TO PERFORM THE LED TEST

- Press the RESET switch (Fig. 28) until LEDs illuminate.
  - The tone device sounds for 1/2 second.
  - The SYSTEM TROUBLE LED, SIGNAL TROUBLE LED and the four ZONE ALARM and TROUBLE LEDs illuminate for five seconds. If any of these LEDs do not illuminate, contact your local Simplex Branch Office (*listed in the Yellow Pages under* Fire Alarm).

BATTERY TESTING INFORMATION

GENERAL INFORMATION

All sealed lead-acid batteries in fire alarm service should be tested annually.

- Replace all sealed lead-acid batteries that have been in service for four or more years.
- It is recommended that a battery tester made specifically for checking sealed lead-acid batteries be used.

  Such a tester is available under Service Part No. 553-602.

If a battery tester is unavailable, the "voltage response test" described below can be used to detect batteries with very low capacity or shorted cells.

Important: A defective battery charger circuit can cause battery failure. Check the condition of the battery charger when either a battery tester or a voltage response test reveals weakened batteries.

TESTING

1. Connect a digital voltmeter across the battery.
2. Connect the appropriate sized resistor(s) (see Chart 1) across the battery's terminals for the listed test time.
3. Record the end voltage reading.
4. Treat the battery as described in Chart 2.

CHART 1

VOLTAGE	AMP HR	RESISTOR (OHMS)	WATTS	PART NUMBER AND DESCRIPTION	TEST TIME
12	5.2	8.0	50	380-008 (2 in parallel)	2 Seconds
12	6.2	6.0	50	380-031	2 Seconds
12	8	4.5	50	380-031 (adj to 4.5 Ohm)	2 Seconds
12	10	4.0	50	380-031 (adj to 4 Ohm)	2 Seconds
12	18	2.0	100	380-031 (3 in parallel)	2 Seconds
12	20	1.5	100	382-090 (2 in parallel)	2 Seconds
12	33	1.0	150	382-090 (3 in parallel)	2 Seconds
6 *	50	1.0	150	382-090 (3 in parallel)	4 Seconds
12	110	1.0	150	382-090 (3 in parallel)	4 Seconds

* Test 2 batteries in series for 12V

*** * * CAUTION * * ***

Resistors will get hot during test!

Use 12AWG wire for battery-to-resistor hookup.

CHART 2

IF END VOLTAGE READING OF BATTERY IS:	INSTRUCTIONS
11.8V or more	Put in Service (See Note 1)
11.7V to 11.0V	* Charge Battery (See Note 1)
10.9 or less	Discard Battery (See Note 2)

* Retest battery after charging.

Note 1: Discard if battery has been in service for four or more years (dispose of properly).

Note 2: Dispose of properly.

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